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X-ray Specimen Naming SOP


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 Lawrence Livermore National Laboratory Global Security Principal Directorate Livermore Explosive Detection Program	Standard Operating Procedure	
	Doc. No. LLNL-TR-660714	Rev. No. 1.0
X-ray Specimen Naming SOP		
Concurrence Technical Leader		Date
Approval IDD Project Principal Investigator		Date

1.0 Purpose

This SOP provides a procedure for naming X-ray specimens.

2.0 Scope

The scope of this SOP is to explain the naming convention for X-ray specimens.

3.0 Definitions

EXD	Explosives Division
HME	Home Made Explosive
LLNL	Lawrence Livermore National Laboratory
TAFRL	Tyndall Air Force Research Laboratory
TSA/OSC	Transportation Security Administration/Office of Security Capabilities
TSL	Transportation Security Laboratory

4.0 Responsibilities

4.1 Roles:

- 4.1.1 LLNL: Honest Broker, X-ray Physics SME, maintains the TSA Explosives Code Dictionary (a table) linking formulation and preparation and code name, generates code names
- 4.1.2 TAFL: HME data collection synthesis lab
- 4.1.3 TSL: Conventional, Military and HME data collection synthesis lab
- 4.1.4 TSA/OSC: End user of data collected under this program
- 4.1.5 EXD: Technical oversight and data collection process manager, approves code names, communicates code names to all Labs. Ensure that Labs use appropriate code names.

4.2 The HME Working Group has the overall responsibility and authority for this procedure.

4.3 Original Standard Operating Procedures shall have the signature form completed prior to the effective date.

5.0 Procedure

- 5.1 An X-ray Specimen_ID (see Figure 1) is composed of three parts: a Material ID code, a Preparation Label, and an X-ray Tag. These parts contain only alphanumeric characters and hyphens and are connected by underscore characters. No spaces are allowed.

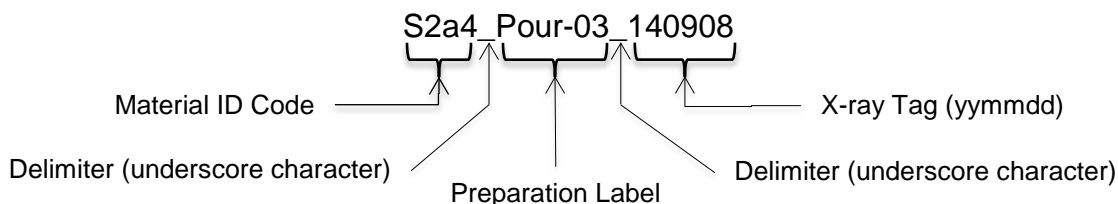


Figure 1. Example of an X-ray Specimen ID.

- 5.1.1 The Material ID code is the formulation code name. For explosives and precursors, the code name is to be looked up in the Explosive Code Dictionary [DICT]. If a code does not currently exist for the formulation, LLNL will determine a new code name using the Formulation Naming SOP [FORM] and add it to the Explosive Code Dictionary. The Material ID code must have hyphens that do not resolve ambiguities removed. An example with a hyphen that must be removed is S2a-4. Examples where hyphens must remain are P1-11 and P11-1.
- 5.1.2 The Preparation Label (see Figure 2) specifies treatment applied to the material in order to prepare it for later x-ray inspection, and it identifies any special aspects of the individual specimen. The Preparation Label consists of a Preparation Type (used e.g. to specify packing), and a Preparation Qualifier (used e.g. to specify batch number), joined by a hyphen.

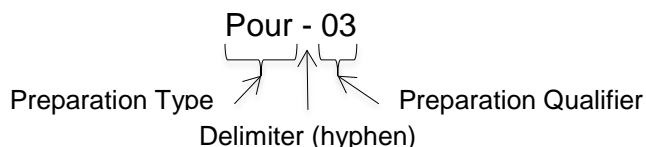


Figure 2. Example of a Preparation Label, showing the Preparation Type and the Preparation Qualifier joined by a hyphen. The character string of an actual Preparation Label does not contain spaces, but for the legibility of the figure, spaces surround the hyphen above.

5.1.2.1 The Preparation Type must be chosen from a list of standardized terms (see Appendix A). If a new type of preparation is necessary, its name must be added to the list of Preparation Types. If no special preparation is required (i.e. for a liquid), the Preparation Type and the hyphen separating it from the Preparation Qualifier is omitted.

5.1.2.2 The Preparation Qualifier contains whatever sub-labels and descriptors that the local experimenters assign, such as batch number or other important features (perhaps an unusual container).

5.1.2.3 In the future, additional sub-labels may be incorporated in the Preparation Qualifier. These would account for other properties such as aging of the material, as well as a locally assigned alphanumeric descriptor of some sort. The Preparation Qualifier would be controlled locally.

5.1.3 The X-ray Tag specifies at a minimum the date of the x-ray tests (in yymmdd format). Information other than the date could be put in the tag in the future, although information such as site, acquisition machine type and container can be specified in the directory structure in which the data are stored (see Appendix B).

6.0 Records

The record generated from implementing this SOP is the creation of an X-ray Specimen ID.

7.0 Appendices and Attachments

Appendix A. – List of standardized Preparation Types

Appendix B. – Recommended directory structure in which data should reside

8.0 Review Interval

The interval for formal review of this SOP is five years.

9.0 Document Revision History

Date	Revision	Author	Responsible Manager	Comments
10/3/14	1.0	Jeff Kallman	Harry E. Martz, Jr.	

10.0 References

[DICT] (U) TSA Code Dictionary for Detecting Explosive Threats and Precursors, LLNL report COE-2015-0005, April 27, 2015, or updated. (S//SSI)

[FORM] Explosive Formulation Code Naming SOP. LLNL report LLNL-TR-660715, Rev. 1.0, October 3, 2014.

[GUIDE] "Electronic Baggage Screening Program (EBSP) Requirements for Automated Detection of Explosives," TSA, DHS, Version 6.0, 10 February 2011.

Appendix A – List of Standardized Preparation Types

Pour	A powdered material is poured into a container without any further processing
Tap	A powdered material is poured into a container and then tapped either by hand or in an autotap machine
LightTamp	A powdered material is put into a container using the Light Tamp SOP.
HeavyTamp	A powdered material is put into a container using the Heavy Tamp SOP.
Press	A powdered material is machine pressed
Cast	A material is melt cast into a container

Appendix B – Recommended Hierarchical Directory Structure for Data**1.0 Test Plan**

1.1 Site (e.g. LLNL, TAFRL, TSL, etc.)

1.1.1 System (e.g. Yxlon, CT-80DR, CTX 9800, etc.)

1.1.1.1 X-ray Specimen ID

Increased depth in the hierarchy beyond the X-ray Specimen ID could be used to encode the container or the Pelican Case used for characterization of materials.